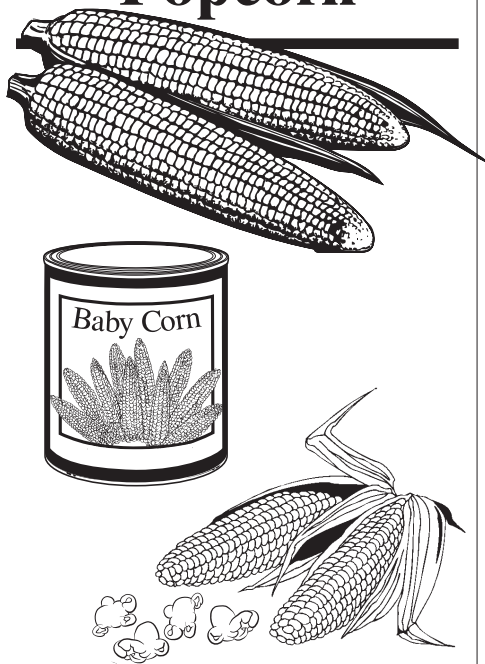


CULTURE AND CULTIVARS

FOR THE GARDENER,
BEDDING PLANT GROWER,
GARDEN CENTER SUPPLIER,
AND DIRECT MARKETER

Growing Sweet Corn, Baby Corn (Pickling Corn), and Popcorn



ABOUT SWEET CORN TYPES

Older, *su* (normal endosperm) corn types are best for cold soils, but they have the least sugar of all sweet corn types. Generally, *selse*, some *se*, and new complex combinations such as the *selselbt₂* types have high sugar content and the best flavor, texture, and aroma.

Any cultivar with even one *sh₂* dose is not recommended for home gardens because isolation (to avoid cross-pollination) can be a problem if other cultivars of sweet corn are grown in your neighborhood. Also, many people consider the kernels of *sh₂* types too sweet and too crisp whether eaten fresh, canned, or frozen. These types were developed for long-distance shipping to supermarkets. For short-term camping, hiking, or mini-vacation trips, *sh₂* types hold acceptable quality the longest. The very best of all worlds are in the new types that are *selselbt₂*, such as 'Serendipity.'

Usually, *se* and *selse* types that are about 75 days or later in maturity and that have deep kernels and long, fat ears (more usable kernels) make the best canning and freezing cultivars. Sometimes an *selse* type may have kernels that are considered too tender for canning. Because of their appearance, yellows are usually thought best for processing (especially canning) and whites are considered poorest.

CULTURAL PRACTICES

Soil Fertility and pH

Soil testing is strongly recommended to determine soil pH and nutrient status. Soil-testing kits can be purchased from your local county cooperative extension office or garden supply center. Sweet corn grows best at a soil pH between 6.0 and 6.8. Fertilize and lime as directed by soil test results.

In the absence of a soil test, fertilize in one of the following ways: (1) Apply 4½ pounds of 5-10-5 fertilizer per 100 square feet mixed with a 1-inch-thick layer of compost and incorporate as a broadcast treatment, or (2) mix compost with 3 pounds of 5-10-5 per 100 square feet prior to planting, and then band 1 pound of 5-10-5 per 100 square feet at planting

time (2 inches to the side and 2 inches below the seed).

Latitude

Some seed catalogs list optimal latitudes for growing sweet corn cultivars. Most of Pennsylvania lies between 40 and 42 degrees latitude, so if the latitude for a cultivar is above 42 degrees, consider a different cultivar.

Planting Dates

Plant seed from May 1 to July 1 in central Pennsylvania. For early harvest, consider soaking organic or untreated seed in nonchlorinated or filtered water (preferably aerated) overnight to pregerminate seed. For successive harvests, sow a series of cultivars of varying maturities and make several sowings of proven main-season types. Remember that corn responds to total heat units, so a later planting of the same cultivar will generally develop at a faster rate than an earlier planting.

If you are careful not to disturb the roots, transplants can also be used for earliness. Either use an expandable peat pellet or a thin-walled, water-permeable (not resistant to water absorption) peat pot in which to grow 3- to 4-week-old transplants.

Depth of Seeding

One inch in heavy or moist soils; 1½ inches in dry or sandy soils.

Spacing

- Between rows: Allow 2½ to 3 feet.
- Between plants in row: Sow seed about 4 inches apart.
- Thinning: Thin early cultivars 8 to 10 inches apart and late cultivars 10 to 12 inches apart. Thin when corn plants are 4 inches high.

Suggestions

To conserve space, plant corn next to vine crops such as cucumbers. As the vines grow, they will tend to grow between the corn rows and up the stalks.

If possible, plant corn cultivars in small blocks to obtain maximum pollination. Four or more short rows of a cultivar side by side will give much better results than one long row. Corn can also be planted in blocks thinned to a spacing of 17 inches by 17 inches to 20 inches by 20 inches.

PENNSSTATE



College of Agricultural Sciences
Agricultural Research and
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SUGGESTED CULTIVARS AND DESIRABLE CHARACTERISTICS

<i>Cultivar (F1 Hybrids)</i>	<i>Days to Maturity</i>	<i>Disease Resistance</i>	<i>Suggested Uses</i>	<i>Genetics</i>	<i>Comments</i>
Yellow					
☉ Seneca Horizon	64	R, SWI	G	<i>su</i>	Good quality; very early; good in cold soils
☉ Early Choice	66		G	<i>se/se</i>	7½-inch ear; 14 rows of kernels; 4½-foot plant; easy snap
☉ Spring Treat	66		G	<i>se</i>	7-inch ears; 14–16 rows; good in cold soils
☉ Sugar Buns	73	NCLB, R, SWI	G	<i>se/se</i>	8-inch ear; high quality; deep kernels
☉ Legend	73	R, ST	G	<i>se</i>	8-inch ear; 16 rows of kernels; good in cold soils
☉ Bodacious	74	SWI	G	<i>se/se</i>	8-inch ear; 18 rows of kernels, too tender for canning or freezing; easy snap
☉ Breeder's Choice	75		G	<i>se</i>	8-inch ear; very tender; creamy; sweet; high quality
☉ Tuxedo	77	NCLB, R, SWR	C, F, G	<i>se/se</i>	8-inch ear; tender; sweet; best for drier soils and disease tolerance; easy snap
☉ Honey Select	79		G	<i>se/se/bt₂</i>	8-inch ear; tender; very sweet; AAS 2001
☉ Incredible	84	R, SWR	C, F, G	<i>se/se</i>	8½-inch ear; excellent quality; 18 rows
Bicolored					
☉ Trinity	68	R, SWI	G	<i>se/se</i>	7½-inch ear; 14 rows of kernels; very high eating quality
☉ Temptation	72	ST	G	<i>se/se</i>	7½-inch ear; 16–18 rows of kernels; good in cold soils
☉ Ambrosia	75	ST, SWR	G	<i>se/se</i>	8-by-2-inch ear; 16 rows of kernels; tender
☉ Mystique	77	NCLB, R	G	<i>se/se</i>	8-inch ear; 16 rows of kernels; very tender and sweet
☉ Providence	80	R	G	<i>se/se/bt₂</i>	8-inch ear; 14–18 rows of kernels; tender; very sweet
☉ Serendipity	82		G		8-inch ear; very tender; extended storage
☉ Delectable	84	R, SWR	C, F, G	<i>se/se</i>	8½-inch ear; 18 rows of kernels; consistent performer
☉ Seneca Dancer	93	NCLB, R, ST, SWI	G	<i>se/se</i>	8½-inch ear; very tender and sweet
White					
☉ Spring Snow	66	SWI	G	<i>se/se</i>	First early; 7-inch ear; good in cold soils
☉ Silver Princess	75	NCLB, R, SWR	G	<i>se/se</i>	7½-inch ear; early maturity; good tip-fill
☉ Cloud Nine	77	NCLB, R, SWI	G	<i>se/se</i>	8½-inch ear; 17 rows; good husk cover; sweeter than 'Argent'
☉ Avalon	82	APT	C, F, G	<i>se/se/bt₂</i>	Excellent quality; less lodging than 'Silver King'
☉ Argent	84	R, SWR	C, F, G	<i>se</i>	Standard; large ears; high quality
☉ Silver King	85	NCLB, R, SWR	G	<i>se/se</i>	Similar to 'Argent'; 8-inch ears; gourmet eating
☉ Silver Queen	92	SWR	C, F, G	<i>su</i>	Very good quality; standard
Baby Corn					
☉ Bonus Baby	35		C, F, G		For salads, pickling, stir-fry
☉ Robust White (21-82W)	95		G		Larger ears and yield than 'White Cloud'
☉ Robust Yellow (90135)	98		G		Very large popped, meant to replace 'Lopop 12'
Popcorn (isolate from sweet corn)					
☉ Robust White (21-82W)	95		G		Larger ears and yield than 'White Cloud'; also baby corn
☉ Robust Yellow (90135)	98		G		Very large popped, meant to replace 'Lopop 12'; also baby corn
☉ Ruby Red	105		G		Expands as well as any white; 1½-inch ear
☉ Shaman's Blue	107		G		8½-inch ear; dark-lavender-blue kernels pop to big white, tender, flakes

 = also recommended for direct market and sustainable agriculture enterprises since it has high yield potential, pest resistance/tolerance, and very good eating quality

Disease resistance: **APT** = apparent pest tolerance—little to no pest damage over several years of observation; **NCLB** = northern corn leaf blight resistant/tolerant; **R** = rust resistant/tolerant; **ST** = smut resistant/tolerant; **SWI** = Stewart's bacterial wilt intermediate; **SWR** = Stewart's bacterial wilt resistant/tolerant

Suggested uses: **C** = canning; **F** = freezing; **G** = fresh from garden

Genetics: **su** = original or standard ("sugary"), rapidly converts to starch above 34°F; **se** = 1 dose of sugar-enhanced allele or heterozygous *se*; **se/se** = 2 doses of sugar-enhanced allele or homozygous *se*; **se/se/bt₂** = the very best new types, do not require special isolation as long as you stay away from any corn with any dose of *sh₂* in either time or space; **bt₂** = brittle gene; *sh₂* types are not recommended for the home garden because of their isolation requirements

Comments: **AAS** = All-America Selections winner

Sweet corn should be picked at the milk stage—as soon as kernels become well filled and plump, but before the starchy or dough stage develops (test a kernel near the tip by pinching). For maximum sweetness and tenderness, eat corn as soon as possible after picking. If quantities must be kept for a day or two, harvest during the cool, early morning hours and then keep the harvested ears out of the sun and just above freezing (about 34°F) until ready to use.

WEED MANAGEMENT

Dense weeds not only rob vegetables of moisture, light, and nutrients but can also harbor insects and create an ideal environment for some diseases to develop. Eliminate young weed seedlings as soon as visible with shallow hoeing or cultivating. Never allow weeds to set seed. Place mulch such as straw or newspaper around plants and between rows to reduce weeds and conserve moisture. Since perennial weeds can harbor disease-causing organisms, manage them year-round near and in plantings.

To help keep weeds and weed seeds out of plantings during the fall and winter months, consider sowing a cover crop in late summer or fall (for example, annual ryegrass or spring oats mixed with hairy vetch). Turn the cover crop under about one month before planting in the spring. Incorporate organic mulches around the plants to a depth of 4 inches or less when the soil is warm (about June 10).

As a general rule, avoid using herbicides for weed management in the home garden. No single herbicide is available that can be safely used on all kinds of vegetables growing in the garden. Also, herbicides are difficult to apply at proper rates in small areas with hand sprayers. In most cases, some areas will receive too little herbicide for effective weed control and other areas may receive such heavy rates that the crop will be damaged or killed. You also risk damaging or killing other plants from spray drift. Finally, avoiding herbicides eliminates potential adverse health affects.

Direct marketers desiring any chemical pest management should consult the *Pennsylvania Commercial Vegetable Production Recommendations* guide (available through the cooperative extension office in your county).

DISEASE IDENTIFICATION

Color photos of disease symptoms can be found in *Identifying Diseases of Vegetables*, which is available for a fee from the College of Agricultural Sciences Publications Distribution Center or from your county cooperative extension office.

Stewart's Bacterial Wilt

Yellow to brown streaks up to 1 inch wide develop on leaves and may extend the length of the leaf. Brown discoloration and sometimes rotted cavities form in the center of the stem near the soil line. Plants affected early may die; plants affected late may be stunted or merely have streaked leaves. The disease is most prevalent following mild winters, especially in the mildest parts of Pennsylvania.

Smut

Smut is characterized by the presence of large, fleshy, irregular galls on leaves, stems, ears, and tassels (male flowers). Immature galls are white and spongy; mature galls turn brown and contain powdery, dark spores. Smut is promoted by plant injury caused by cultivation, insects, and hail.

Rust and Leaf Spots

Rust is characterized by reddish to brown, rusty, powdery areas on the top surfaces of leaves. Leaf spots can be small or large; the spots usually are elongated and appear first on oldest leaves. These diseases can be significant, but usually only late in the season.

General Management Strategies

Grow cultivars with resistance to Stewart's wilt when needed. Remove and dispose of smut balls before they turn black and break open. Dispose of stalks and leaves as soon as harvest is over.

INSECT IDENTIFICATION AND MANAGEMENT

A statewide monitoring network gives flight catches determined from pheromone traps of European corn borer, corn earworm, and fall armyworm. Contact your county cooperative extension office for more information or call 1-800-PENN-IPM for flight data. The flight information is presented as maps at www.pestwatch.psu.edu.

Corn Earworms

Earworms are large (up to 1¾ inches) and vary greatly in color, from a light green or pink to brown with alternating light and dark stripes running lengthwise on the body. They are the larval life stage of moths that do not overwinter well in Pennsylvania but migrate into our area from the south annually. Pennsylvanians typically must deal with the immigrants and their offspring. Therefore, the worms are a minor problem on early corn, but the crop can become heavily infested in early August. Adult moths lay eggs directly on silks, and young larvae then tunnel directly into the tip of the ear. Use the Web site to determine when moths are moving into the area, and apply controls when moths are flying in your area. Management can include either spraying the ear zone when plants are 30 percent, 50 percent, and 100 percent in silk, or brushing silks with horticultural oils if done several times as the silks grow. Cutting tips off ears removes worms.

European Corn Borers

Borers are up to 1 inch long, cream or flesh colored, and marked with numerous small, round, brown spots. They are the larva of moths that overwinter and have multiple (typically two) generations in Pennsylvania. They feed in all parts of the stem and ear. A line of pinholes across the leaves is characteristic of borer feeding because the moths chewed through the leaf while it was still curled. Moths are strongly attracted to tassel and silking corn. The typical time to manage the first brood with sprays is during the last two weeks of June; spray to manage the second brood during August. See the Web site for current conditions.

Fall Armyworms

Fully grown larvae are about 1½ inches long; worms vary from light tan or green to black with a black stripe along each side. The head has a prominent “Y” with a series of dark spots running along the back, and the last or next-to-last abdominal segment has four distinct black dots. These larvae of moths require warmer areas to overwinter, and thus must migrate from great distances.

Sap Beetles

These beetles can be found feeding on silks from June through August.

Dusky sap beetles are small, about 3/16 inch long. They are gray to black in color and oblong in shape. They invade plants when tassels begin to show, feed on green silks, and feed on kernels when the silks begin to brown. Damage from corn borer larvae and Japanese beetles attract sap beetles.

Flea Beetles

Flea beetles are small (1/16 inch) and black and can be recognized by their jumping habit when disturbed. They eat the surface from the leaf, causing a white streak parallel with the veins. Flea beetles are most abundant in

warmer areas of the state, especially after mild winters. The beetles are most important in their transmission of a disease known as Stewart’s wilt or bacterial wilt. Where wilt has been a problem, grow resistant cultivars.

General Management

Use the Web site to help determine when moths are flying in your area, and then use an insecticide labeled for controlling vegetable insects in sweet corn, or horticultural oil if only corn earworm is the concern. Bt sprays may be effective for corn borers.

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